

REMARKS

Claims 1 through 12 are pending in this application. Reconsideration is requested based on the following remarks.

Claim Rejections - 35 U.S.C. § 102:

Claims 2, 3, 4, 6, 7, 8, 10, 11, and 12 were rejected under 35 U.S.C. § 102(b) as anticipated by Han US 5,534,762 (hereinafter "Han"). The rejection is traversed. Reconsideration is earnestly solicited.

Claims 2 and 10 recite:

"supplying current to the drive mechanism from the power supply adaptor while charging the battery with current supplied from the power supply adaptor."

Han neither teaches, discloses, nor suggests supplying current to the drive mechanism from the power supply adaptor while charging the battery with current supplied from the power supply adaptor, as recited in claims 2 and 10. As Han, rather, describes at column 11, lines 44-49,

Meanwhile, as a result of the determination at step S21, if the robot cleaner 1 has touched the power source supplier 110 (in case of yes), the flow advances to step S22, thereby to stop operation of the robot cleaner 1 according to the control of the control means 20 and to cause the robot cleaner 1 to touch the power source supplier 110.

The fact that operation of the robot cleaner 1 *stops* when it touches power source supplier 110 implies that no current is *drawn* by the drive mechanism from the power supply adaptor while the battery is being charged. If no current is *drawn* by the drive mechanism, no current need be *supplied*. This is to be contrasted with claims 2 and 10, which recite, "supplying current to the drive mechanism from the power supply adaptor while charging the battery with current supplied from the power supply adaptor." Claims 2 and 10 are submitted to be allowable. Withdrawal of the rejection of claims 2 and 10 is earnestly solicited.

Claims 3 and 11:

Claims 3 and 11 recite:

"supplying current to the logic unit from the power supply adaptor while charging the battery with current supplied from the power supply adaptor when the logic unit is operating."

Han neither teaches, discloses, nor suggests supplying current to the logic unit from the power supply adaptor while charging the battery with current supplied from the power supply adaptor when the logic unit is operating, as recited in claims 3 and 11. Neither Fig. 7, the Abstract, nor column 6, lines 39-42 of Han describe supplying current to the logic unit from the power supply adaptor while charging the battery with current supplied from the power supply adaptor when the logic unit is operating, contrary to the assertion in the Office Action. Fig. 7, rather, is described at column 6, lines 39-42 as showing,

As evidenced in FIG. 7, control means 20 denote a microcomputer for controlling overall operations of the robot cleaner 1 by being supplied with a DC voltage from the battery.

Nothing at all is mentioned here about charging the battery, let alone, "supplying current to the logic unit from the power supply adaptor while charging the battery with current supplied from the power supply adaptor when the logic unit is operating," as recited in claims 3 and 11. Claims 3 and 11 are submitted to be allowable. Withdrawal of the rejection of claims 3 and 11 is earnestly solicited.

Claims 4 and 12:

Claims 4 and 12 recite:

"detecting whether the computer is driven, and when the computer is not driven, automatically cutting off power supply to the drive mechanism from the battery."

Han neither teaches, discloses, nor suggests detecting whether the computer is driven, and when the computer is not driven, automatically cutting off power supply to the drive mechanism from the battery, as recited in claims 4 and 12. Neither Figs. 4 nor 7, nor the Abstract, nor column 6, lines 39-42 of Han describe detecting whether the computer is driven, and when the computer is not driven, automatically cutting off power supply to the drive mechanism from the battery, contrary to the assertion in the Office Action. Fig. 7, rather, is described at column 6, lines 39-42 as showing,

As evidenced in FIG. 7, control means 20 denote a microcomputer for controlling overall operations of the robot cleaner 1 by being supplied with a DC voltage from the battery.

Nothing at all is mentioned here about a drive mechanism, let alone, "detecting whether the computer is driven, and when the computer is not driven, automatically cutting off power supply to the drive mechanism from the battery," as recited in claims 4 and 12.

Figs. 8A-8C, for their part, are flowcharts depicting the steps by which robot cleaner 1 is guided towards a power source. No computer is even mentioned in Figs. 8A-8C, let alone, "detecting whether the computer is driven, and when the computer is not driven, automatically cutting off power supply to the drive mechanism from the battery," as recited in claims 4 and 12. Claims 4 and 12 are submitted to be allowable. Withdrawal of the rejection of claims 4 and 12 is earnestly solicited.

Claim 6:

Claim 6 recites:

"supplying current to the drive mechanism from a power supply adaptor while charging the battery with current supplied from the power supply adaptor."

Han neither teaches, discloses, nor suggests supplying current to the drive mechanism from a power supply adaptor while charging the battery with current supplied from the power supply adaptor, as discussed above with respect to the rejection of claims 2 and 10. Claim 6 is thus submitted to be allowable as well, for at least those reasons discussed above with respect to the rejection of claims 2 and 10. Withdrawal of the rejection of claim 6 is earnestly solicited.

Claim 7:

Claim 7 recites:

"supplying current to the logic unit from the power supply adaptor while charging the battery with current supplied from the power supply adaptor when the logic unit is operating."

Han neither teaches, discloses, nor suggests supplying current to the logic unit from the power supply adaptor while charging the battery with current supplied from the power supply adaptor when the logic unit is operating, as discussed above with respect to the rejection of claims 3 and 11. Claim 7 is thus submitted to be allowable as well, for at least those reasons discussed above with respect to the rejection of claims 3 and 11. Withdrawal of the rejection of claim 7 is earnestly solicited.

Claim 8:

Claim 8 recites:

"automatically cutting off power supply to the drive mechanism from the battery when the computer is not driven."

Han neither teaches, discloses, nor suggests automatically cutting off power supply to the drive mechanism from the battery when the computer is not driven, as discussed above with respect to the rejection of claims 4 and 12. Claim 8 is thus submitted to be allowable as well, for at least those reasons discussed above with respect to the rejection of claims 4 and 12. Withdrawal of the rejection of claim 8 is earnestly solicited.

Claim Rejections - 35 U.S.C. § 103:

Claims 1 and 9 were rejected under 35 U.S.C. § 103 as being unpatentable over Han in view of Ueno et al. US 6,480,761 (hereinafter "Ueno"), and Song et al., US 2003/0028993 (hereinafter "Song"). The rejection is traversed. Reconsideration is earnestly solicited.

The Office Action acknowledges graciously that Han shows no "alarm indicating an insufficient remaining power and instructing the charging/discharging circuit to charge the battery," as recited in claims 1 and 9. The Office Action seeks to address this deficiency of Han by combining Han with Ueno. Ueno, however, shows no "alarm indicating an insufficient remaining power and instructing the charging/discharging circuit to charge the battery" either, contrary to the assertion in the Office Action, and thus cannot make up for the deficiencies of Han with respect to claims 1 and 9.

As Ueno, rather, describes at column 4, lines 12-19,

The battery-driven legged robot may further comprise at least one device of an attitude sensor, an image input device, and a sound input-output device. The power-control unit may block the driving power to the at least one device of the attitude sensor, the image input device, and the sound input-output device when power of the battery decreases below a predetermined value, thereby reducing power consumption.

Since Ueno reduces power consumption by *blocking* driving power to the at least one device of the attitude sensor, the image input device, and the sound input-output device when power of the battery decreases below a predetermined value, Ueno has no use for "an alarm indicating an insufficient remaining power and instructing the charging/discharging circuit to charge the battery," as recited in claims 1 and 9 as well.

The Office Action also acknowledges graciously that Han shows no "issuing a charge request message to a user," as recited in claims 1 and 9. The Office Action seeks to address this deficiency of Han by combining Han with Song. Song, however, shows no "issuing a charge request message to a user" either, contrary to the assertion in the Office Action, and thus cannot make up for the deficiencies of Han with respect to claims 1 and 9.

The charge request signal of Song, rather, goes to controlling portion 18, not the user. Furthermore, the charge request signal of Song will be an electrical signal that will never be heard by a user unless something goes very, very wrong. In particular, as Song describes at paragraph [0053],

[0053] A battery charge level detecting portion 20 detects the charge level of the battery 19, and generates a signal for charge request when the detected charge level reaches a predetermined lower limit.

Thus, since Song generates a signal for charge request when the detected charge level reaches a predetermined lower limit, Song has no need for also "issuing a charge request message to a user," as recited in claims 1 and 9. Thus, even if Han, Ueno, and Song were combined as proposed in the Office Action, the claimed invention would not result.

Finally, the Office Action provides no motivation or suggestion to combine the teachings of Han, Ueno, and Song as required by 35 U.S.C. § 103(a) and the M.P.E.P. §706.02(j)(D), beyond the assertion at page 5 that,

"It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the robot type of Han with the robot type of Ueno *et al.*, because this modification would have enhanced Han's robot in order to indicate that the battery has decreased below a predetermined value, thereby improving the efficiency and the reliability of the power supply control for mobile robot."

Han, however, describes the function of a robot cleaner at column 1, lines 53-60 to be,

In the case of the conventional robot cleaner thus described, when a power source of the battery 10 for supplying an operating energy to the cleaner 1 is consumed thereby to cause the same to drop below a predetermined level in the midst of the cleaning operation or during completion stage of the same, the cleaner stops the cleaning operation and starts to move by itself toward the power source supply means 130 disposed on a wall surface.

Since the robot cleaner is intended to monitor its own power source and recharge, when necessary by itself, i.e. without human intervention, as described in Han, it would serve no purpose to also alert people that power was low with an alarm. The robot cleaner of Han, rather, is supposed to be unobtrusive, not alarming. It is submitted, therefore, that persons of ordinary skill in the art who read Han for all it contains would have been deterred from modifying Han as proposed in the Office Action, since to do so would have negated the feature touted by Han, the ability of robot cleaner 1 to operate by itself.

The Office Action also asserts at page 5 that,

“It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the robot types of Han and Ueno *et al.*, with the robot type of Song *et al.*, because this modification would have enhanced Han’s and Ueno’s *et al.* robot in order to process a series of jobs that allow a menu selected by the user to be carried out by the robot cleaner, thereby improving the efficiency and the reliability of the power supply control for mobile robot.”

Here again, since the robot cleaner is intended to operate by itself, i.e. without human intervention, as described above, it would serve no purpose to add menu input to *allow* user intervention. It is submitted, therefore, that persons of ordinary skill in the art who read Han for all it contains would have been deterred from modifying Han as proposed in the Office Action, since to do so would have negated the feature touted by Han, the ability of robot cleaner 1 to operate by itself. Claims 1 and 9 are submitted to be allowable. Withdrawal of the rejection of claims 1 and 9 is earnestly solicited.

Claim 5:

Claim 5 was rejected under 35 U.S.C. § 103 as being unpatentable over Han in view of Song. The rejection is traversed. Reconsideration is earnestly solicited.

The Office Action acknowledges graciously that Han shows no “issuing a charge request message to a user,” as recited in claim 5. The Office Action seeks to address this deficiency of Han by combining Han with Song. Song, however, shows no “issuing a charge request message to a user” either, contrary to the assertion in the Office Action, and thus cannot make up for the deficiencies of Han, as discussed above with respect to the rejection of claims 1 and 9. The charge request signal of Song, rather, goes to controlling portion 18, not the user. Thus, even if Han and Song were combined as proposed in the Office Action, the claimed invention would not result.

Finally, the Office Action provides no motivation or suggestion to combine the teachings of Han and Song as required by 35 U.S.C. § 103(a) and the M.P.E.P. §706.02(j)(D), as also discussed above with respect to the rejection of claims 1 and 9. Claim 5 is thus submitted to be allowable as well, for at least those reasons discussed above with respect to the rejection of claims 1 and 9. Withdrawal of the rejection of claim 5 is earnestly solicited.

Conclusion:

Accordingly, in view of the reasons given above, it is submitted that all of claims 1 through 12 are allowable over the cited references. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

Respectfully submitted,

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